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Summary

Researcher with five years of academic experience in applying data science methods to neural and behavioral data. Excited to use these skills to extract business value from big data and bring data products to consumers.

Skills

- Python for data cleaning, analysis, and visualization (pandas, numpy, seaborn, pyplot) (5 years)
 - Advanced statistical analyses (scipy, custom) (5 years)
 - Git (GitHub, command line, GitKraken) (2 years)
 - Machine Learning (sklearn, scipy, keras) (2 years)
 - Technical writing and presentation (5 years)
 - Lay audience communication (5 years)
 - SQL (<1 year)
 - Experimental design (7 years)
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Experience

Cold Spring Harbor Laboratory – Graduate researcher

Cold Spring Harbor, NY

Imaging and manipulating mouse cortical decision-making | August 2016 to May 2022

- Large-scale project to determine the contribution of individual brain regions in decision-making during a complex behavioral task
- Recorded 100Tb neural imaging data from behaving mice (Arduino, python)
- Implemented automated preprocessing and data transfer (batch script executing python and MATLAB scripts)
- Created multi-stage analytic pipeline (PCA, custom curve fitting, feature engineering, cross-validated logistic regression, Bernoulli testing, permutation testing) to create publication-ready figures (matplotlib, seaborn)
- Presented at The Society for Neuroscience 2021 with manuscript in preparation

International Brain Laboratory – Researcher

Cold Spring Harbor, NY

Creating a standardized decision-making task for mice | April 2018 to April 2020

- Collaborated with a 20-member team to develop a novel behavioral task, deploying the first multi-site standardized mouse behavior in neuroscience
- Co-authored the nearly 200-page detailed protocols for building the apparatus, installing the required code, and performing the experiments
- Co-authored a paper detailing the findings from this behavior in *eLife*
- Served as a code reviewer to ensure reproducibility of analyses (python with clean conda install)

Recording neural activity across the mouse brain | May 2019 to April 2022

- Performed challenging hours-long experiments in contribution to the largest known database of single-cell neural activity
- Performed and evaluated quality-control on multiple data streams (matplotlib and pyqt GUIs)

Colby College – Teaching assistant

Waterville, Me

Research Methods and Statistics in Psychology | Fall 2014

- Assisted in design and performance of experiments and statistical tests (SPSS)
- Answered statistical questions during the lab portion of the course

Woodsmen's team captain | September 2014 to May 2016

- Selected teams for competitions, optimizing team performance while minimizing inter-personal conflict
- Organized and ran team practices, including teaching and mentoring new members

University of California San Francisco – NSF REU Research Assistant

San Francisco, CA

Epileptic zebrafish heart monitoring | June to August 2015

- Developed a protocol for video-based tracking of heart rate in zebrafish larvae as part of an anti-epileptic drug screening platform (ImageJ)
- Used this protocol to assess the cardio-toxicity of several anti-epileptic drug candidates

Education

Doctor of Philosophy: Neuroscience

Cold Spring Harbor Laboratory

Mesoscale imaging and inhibition in a standardized decision-making task in mice

August 2016 to May 2022

Bachelor of Arts: Biology and Psychology

Colby College, Waterville Me

Honors: Phi Beta Kappa, Summa Cum Laude, William D. Adams Presidential Scholar

August 2012 to May 2016

Publications

The International Brain Lab et al., 2022. Reproducibility of in-vivo electrophysiological measurements in mice. *BioRxiv*.

The International Brain Lab et al. 2021. Standardized and reproducible measurement of decision-making in mice. *eLife*. 10: e63711. DOI: 10.7554/eLife.63711

Krasniak, C. S. and Ahmad, S. T. 2016. The Role of CHMP2B Intron5 Mutation in Autophagy and Frontotemporal Dementia. *Brain Research*. 1649(Pt B):151-157.

Lee, D., Zheng, X., Shigemori, K., Krasniak, C. S., Liu, J.B., Tang, C., Kavalier, J., Ahmad, S.T. 2019. Expression of mutant CHMP2B linked to neurodegeneration in humans disrupts circadian rhythms in *Drosophila*. *FASEB Bioadvances*. DOI: 10.1096/fba.2019-00042

Grone, B. P., Marchese, M., Hamling, K. R., Kumar, M. G., Krasniak, C. S., Sicca, F., Santorelli, F. M., Patel, M., & Baraban, S. C. 2016. Syntaxin-Binding Protein 1 (STXBP1) Mutant Zebrafish to Model Human Neurodevelopmental Disease. *PLOS One*. 11(3): e0151148.

Griffin, A., Krasniak C., Baraban, S. C. 2016. Advancing Epilepsy Research Through Personalized Genetic Zebrafish Models. *Progress in Brain Research*. 226:195-207.
